

**SAMS**

CP21 08979

# COMPUTERFACTS™

TECHNICAL SERVICE DATA

## ATARI® MODEL 1025 PRINTER



FEATURES: COMPLETE SCHEMATICS • PRELIMINARY SERVICE CHECKS • TROUBLESHOOTING TIPS •  
EASY-READ WAVEFORMS • REPLACEMENT PARTS LISTS • SEMICONDUCTOR CROSS-REFERENCE

## PRELIMINARY SERVICE CHECKS

This data provides the user with a time-saving service tool which is designed for quick isolation and repair of printer malfunctions.

Check all interconnecting cables for good connection and correct hook-up before making service checks.

Replacement or repair of CPU board or connectors may be necessary after the malfunction has been isolated.

## TEST EQUIPMENT AND TOOLS

### TEST EQUIPMENT

Digital Volt/Ohm Meter  
Scope  
Logic Probe

### TOOLS

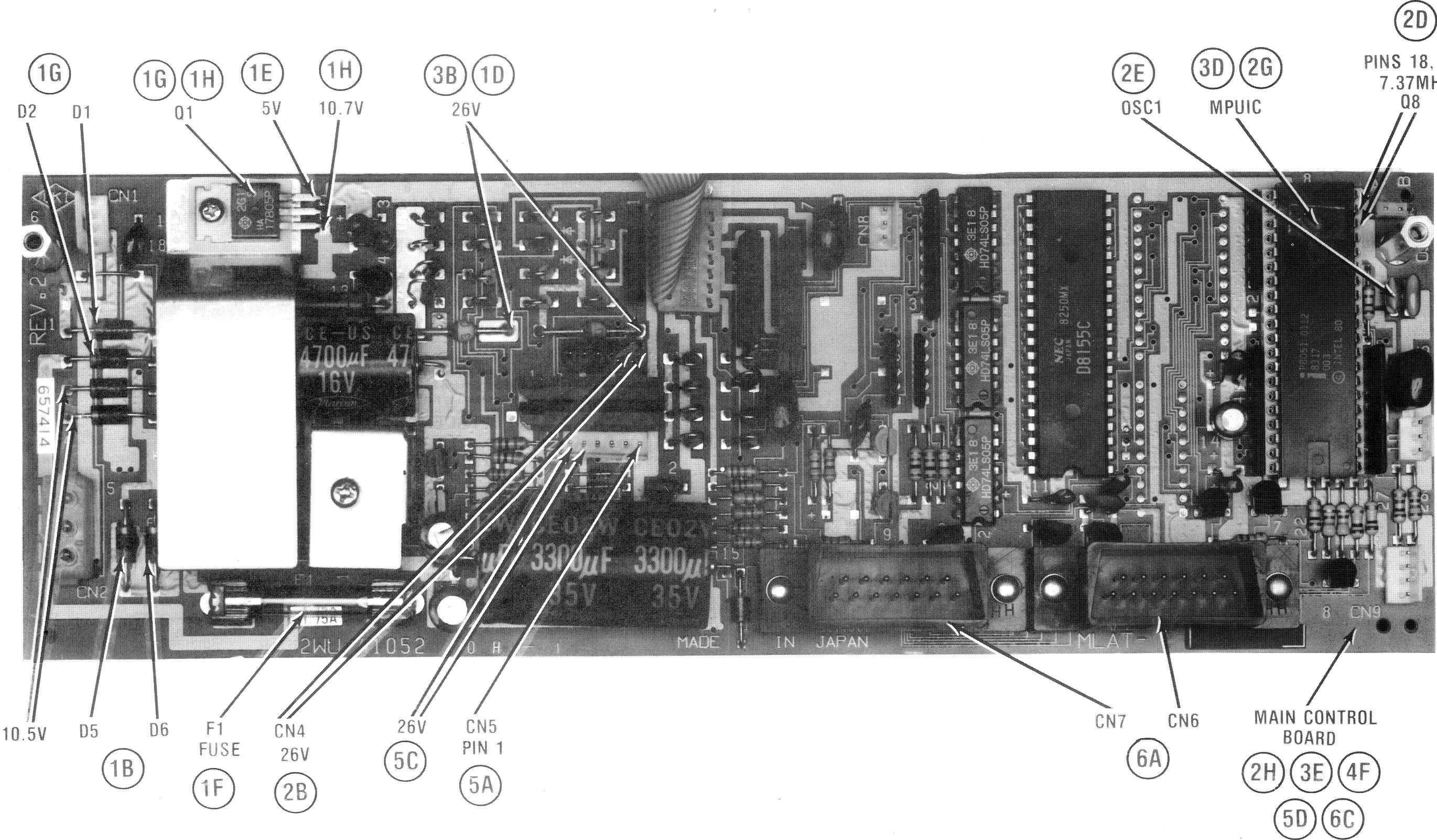
Phillips Screwdriver  
Small Screwdriver  
Low Voltage Soldering Iron  
Desoldering Iron

## REPLACEMENT PARTS AND DESCRIPTION

ITEM NO.	DESCRIPTION
D1	Diode, GP15B
D2	Diode, GP15B
D5	Diode, GP15B
D6	Diode, GP15B
F1	Fuse, 1.75A @250V Fast Acting
F2	Fuse, 1.75A @250V Fast Acting
M1	Print Head
M2	Carriage Motor
M3	Line Feed Motor
OSC1	Crystal, 7.37MHz
Q1	IC, HA17805P
Q8	IC, iP8051
T1	Power Transformer, 4LP-45191-137



PRELIMINARY SERVICE CHECKS (Continued)



## MISCELLANEOUS ADJUSTMENTS

### FIRST CHARACTER PRINTING POSITION ADJUSTMENT

Loosen screws fastening Carriage Motor to bottom cover. Turn motor assembly a little one way or the other so that when the power is turned ON, the print head returns and stops at the home sensor position within tolerance, see Figure 1. If changing position of motor assembly does not correct the print position, change the engagement position of the carriage synchro-belt on the pulley by one or two teeth.

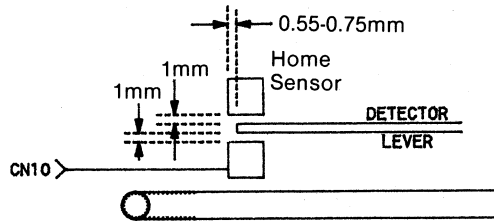


Figure 1

### PLATEN/PAPER SEPARATOR ADJUSTMENT

Remove the upper cover, loosen the paper separator screws. Adjust the clearance between the platen and the paper separator for approximately 0.5mm. Tighten the paper separator screws, see Figure 2.

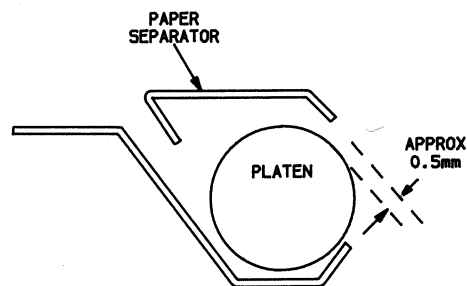


Figure 2

### PRINTHEAD ADJUSTMENT

Print head adjustment should be performed after repair of printer mechanism, carriage assembly frame, or print head. Loosen carriage shaft screws on the sides of the printer mechanism. Move carriage shaft forward or backward until gap between platen and print head is between 0.45mm and 0.5mm.



# PRELIMINARY SERVICE CHECKS (Continued)

## SERVICE CHECKS

MATCH THE NUMBERS ON THE INTERCONNECTING DIAGRAM AND PHOTOS WITH THE NUMBERS ON THE SERVICE CHECKS TO BE PERFORMED.

### ① POWER SUPPLY

- (A) If the Printer is dead check Fuse F2.
- (B) Check Diodes D5 and D6 for shorts.
- (C) If Diodes D5 and D6 are good, check Power Transformer (T1) by substitution.
- (D) Check for 26V at anode of Diodes D26 and D46. If 26V is missing check Main Control Board by substitution.
- (E) Check for 5V at pin 2 of Regulator IC (Q1), if 5V is missing check Fuse F1.
- (F) If Fuse F1 is open, check Diodes D1 and D2 for shorts.
- (G) If Diodes D1 and D2 good, check Regulator IC (Q1) for a short.
- (H) Replace Fuse F1 and check for 10.5V at pin 1 of Regulator IC (Q1).

### ② PRINTER CARRIAGE ASSEMBLY DOES NOT MOVE

- (A) Turn Printer OFF, move carriage assembly to the right. Turn Printer ON. Carriage assembly should move to Home position.
- (B) If carriage assembly does not move, check for 26V at pins 5 and 6 of Connector CN4.
- (C) If 26V is missing, check the power supply.
- (D) If the 26V is present, check for 7.37MHz at pins 18 and 19 of the CPU IC (Q8).
- (E) If frequency is not correct, check Crystal (OSC1) by substitution.
- (F) Check resistances of Carriage Motor winding (M2).
- (G) Check CPU IC (Q8) by substitution.
- (H) Check the Main Control Board by substitution.

### ③ PRINT HEAD WILL NOT PRINT

- (A) Check the print head cable Connector CN3 for good connection.
- (B) Check for 26V at anode and cathode of Diode D26.
- (C) Check resistances of print head.
- (D) Check CPU IC (Q8) by substitution.
- (E) Check Main Control Board by substitution.

### ④ MISSING DOTS IN THE PRINT PATTERN

- (A) Clean print head face.
- (B) Check print head Connector CN3 for good connection.
- (C) Check the flat cable for broken or pinched lead.
- (D) Disconnect print head cable and check resistances of the print head.
- (E) Check the print head by substitution.
- (F) Check Main Control Board by substitution.

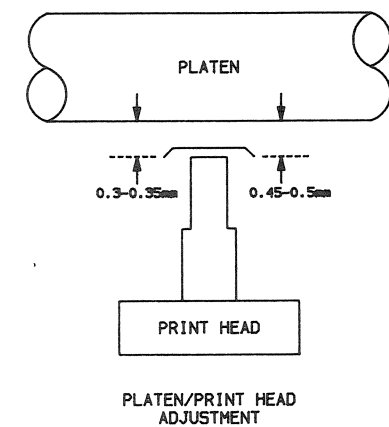
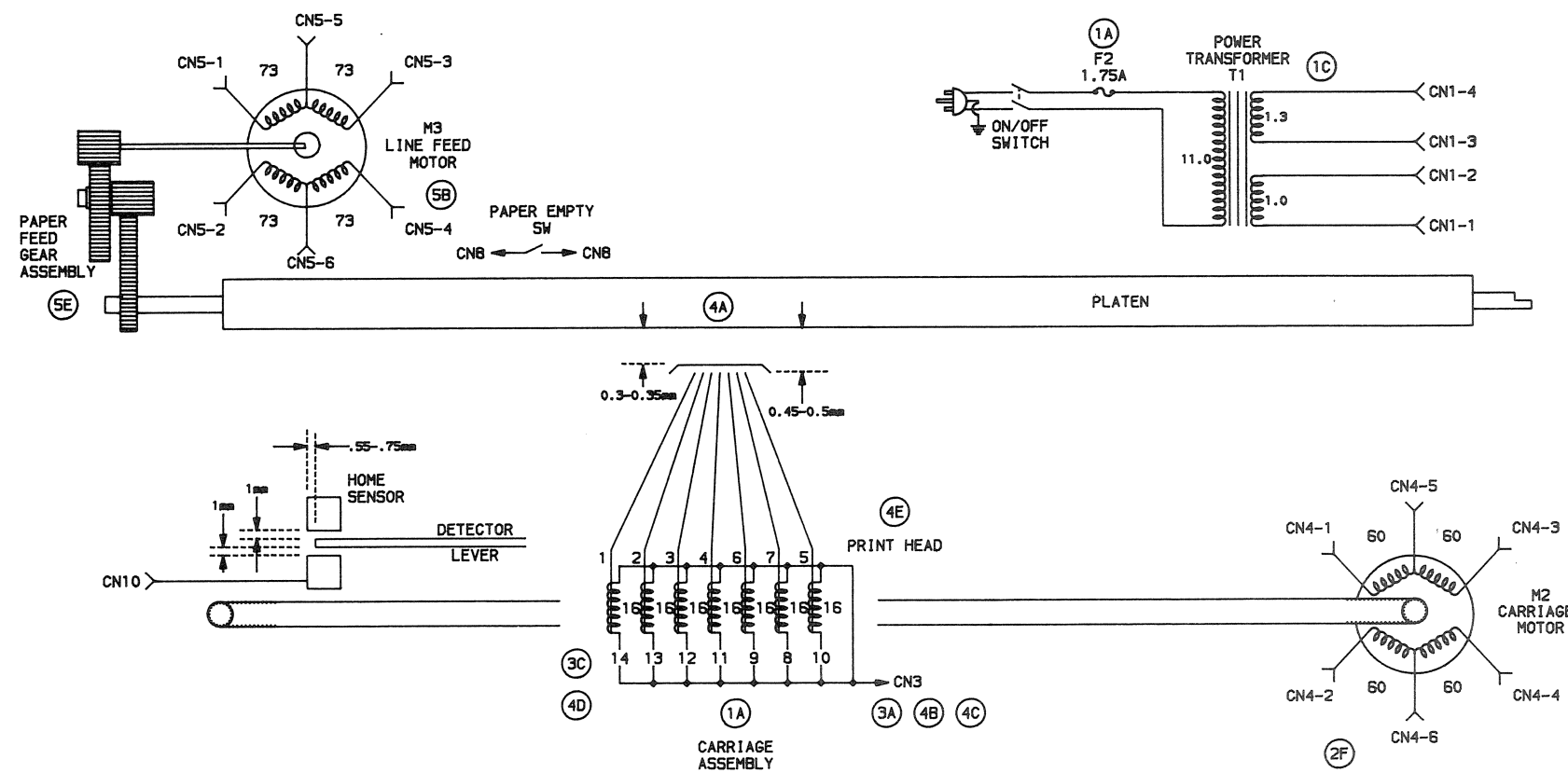
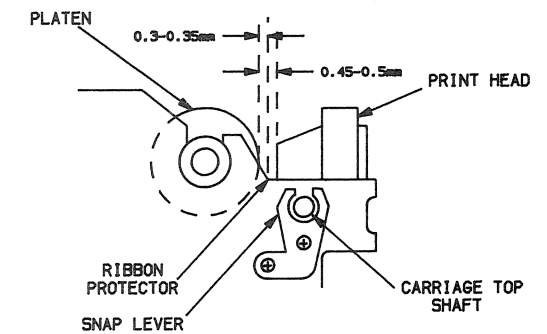
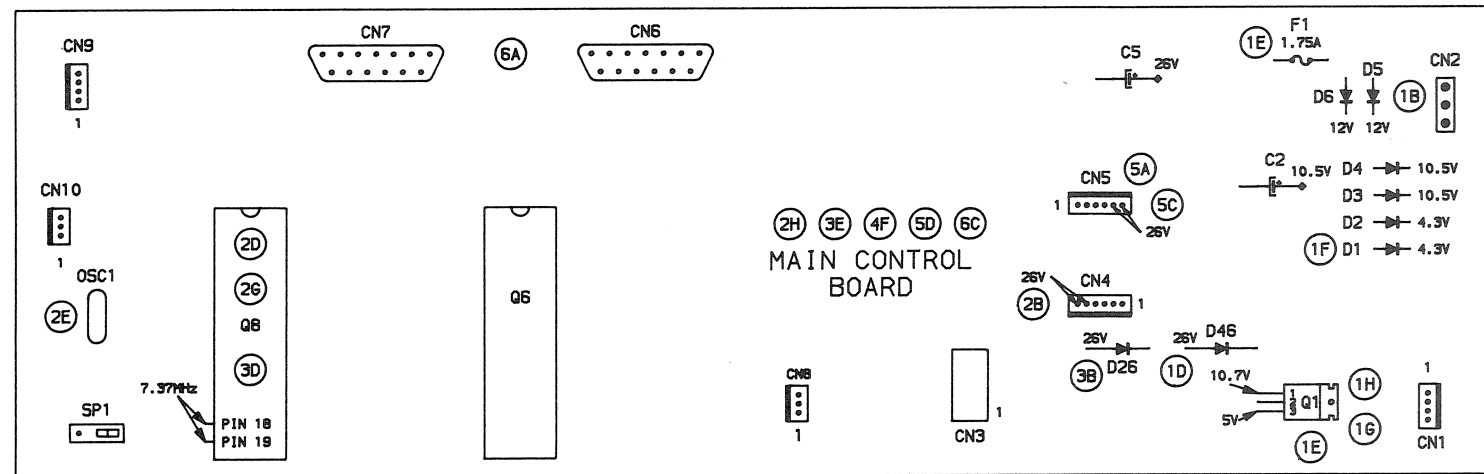
### ⑤ LINE FEED WILL NOT OPERATE

- (A) Check Connector CN5 for good connection.
- (B) Check resistances of Line Feed Motor (M3).
- (C) If the resistances of Line Feed Motor are good, check for 26V at pins 5 and 6 of Connector CN5.
- (D) Check Main Control Board by substitution.
- (E) If Line Feed Motor is erratic or stops, check the gear assembly on the left hand side for broken gears.

### ⑥ PRINTER WILL NOT PRINT BY COMPUTER COMMAND

- (A) Check Connector CN6 or CN7 whichever is used for good connection.
- (B) Check the cable between the Computer and the Printer by substitution.
- (C) Check Main Control Board by substitution.

## PRELIMINARY SERVICE CHECKS (Continued)



# **PRELIMINARY SERVICE CHECKS (Continued)**

## **DISASSEMBLY INSTRUCTIONS**

### **UPPER COVER REMOVAL**

Remove platen knob, remove top cover by pulling upwards. Loosen two screws holding switch assembly and slide switch assembly backwards. Remove two screws from inside the front of upper cover. Tip upper cover back and lift upper cover from Printer.

### **PRINT HEAD REMOVAL**

Remove upper cover, slide carriage assembly to right end of Printer. Carefully remove print head cable plug from flat cable connector located on the carriage assembly frame beneath the print head. Push down print head lock lever and lift head straight up from the carriage assembly frame.

### **PRINTER MECHANISM REMOVAL**

Remove Printer upper cover. Slide carriage assembly to far right. Disconnect print head cable plug and remove print head. Remove the flat cable connector screw and the connector from carriage frame assembly. Cut plastic tie-wraps that fasten flat cable to side of printer mechanism. Disconnect all connectors attached to P.C. board. Remove P.C. board. Set Printer up side down on a soft cloth and remove four screws holding mechanism to the bottom of cabinet. Carefully remove bottom case and set printer mechanism upright.

### **MAIN CONTROL BOARD REMOVAL**

Remove upper cover assembly. Disconnect all connectors from Main Control Board. Remove print head assembly. Remove flat cable connector from carriage frame assembly. Cut the tie-wrap which fastens the flat cable to the right side of printer mechanism. Remove two screws holding Main Control Board. Lift Main Control from Printer.

### **PLATEN REMOVAL**

Remove cabinet top cover. Lift scale bar to highest position. Remove two screws holding paper separator and remove paper separator. Remove C ring and platen bearing from right end of platen. Pull left bearing side ways from side plate. Turn platen bearing 90° and pull out platen.

### **CARRIAGE MOTOR REMOVAL**

Remove the upper cover. Remove the Main Control Board, disconnect Connector CN4. Cut the tie wraps securing the Carriage Motor leads. Remove two screws fastening the Carriage Motor to the bottom cover. Remove carriage belt from Carriage Motor pulley. Lift Carriage Motor from Printer.

### **PAPER FEED MOTOR REMOVAL**

Remove upper case. Remove Main Control Board. Remove two phillips screws fastening Paper Feed Motor to left side of printer mechanism. Remove Paper Feed Motor from Printer.



# **PRELIMINARY SERVICE CHECKS (Continued)**

## **PREVENTATIVE MAINTENANCE**

### **ENVIRONMENT**

Computers perform best in a clean, cool area that is below 80 degrees Fahrenheit and free of dust and smoke particles. Even though home Computers are not affected by cigarette smoke as much as commercial Computers are affected, it is better to maintain a smoke-free area around the Computer. Do not block cabinet vents of any of the Computer system; Computer, Monitor, Printer, or other power devices.

### **ELECTRICAL POWER**

Variations in the line voltage can affect the Computer. Try to avoid these fluctuations by using an AC receptacle that is on a power line not used by appliances or other heavy current demand devices. A power-surge protector, power-line conditioner, or non-interruptible power supply may be needed to cure the problem. **Do not** switch power On and Off frequently.

### **KEYBOARD**

Liquids spilled into the Keyboard can ruin it. Immediately after a spill occurs, disconnect the Computer power plug from AC power outlet. Then, if circuitry or contacts are contaminated, disassemble the Keyboard and carefully rinse the Keyboard printed circuit board with distilled water and let it dry. Use a cotton swab to clean between the keys. Use a non-abrasive contact cleaner and lint-free wipers on accessible connectors and contacts.

### **DISK DRIVES**

Clean the read/write heads of the Disk Drives about once a month or after 100 hours usage. Use only an approved head cleaning kit.

Handle carefully to preserve proper disk head alignment. A sudden bump or jolt to the Disk Drives can knock the disk head out of alignment. If the disk drive must be transported, place an old disk in slot and close door during transport.

Store disks in their protective covers and never touch the disk surface. Observe the disk handling precautions usually found on the back of disk protective covers.

### **PRINTERS**

Carefully vacuum the Printer regularly. Wipe surface areas clean using a light all-purpose cleaner. Do not oil the machine. The oil will collect abrasive grit and dust. The dust will act as a blanket. This can cause components to overheat and fail.

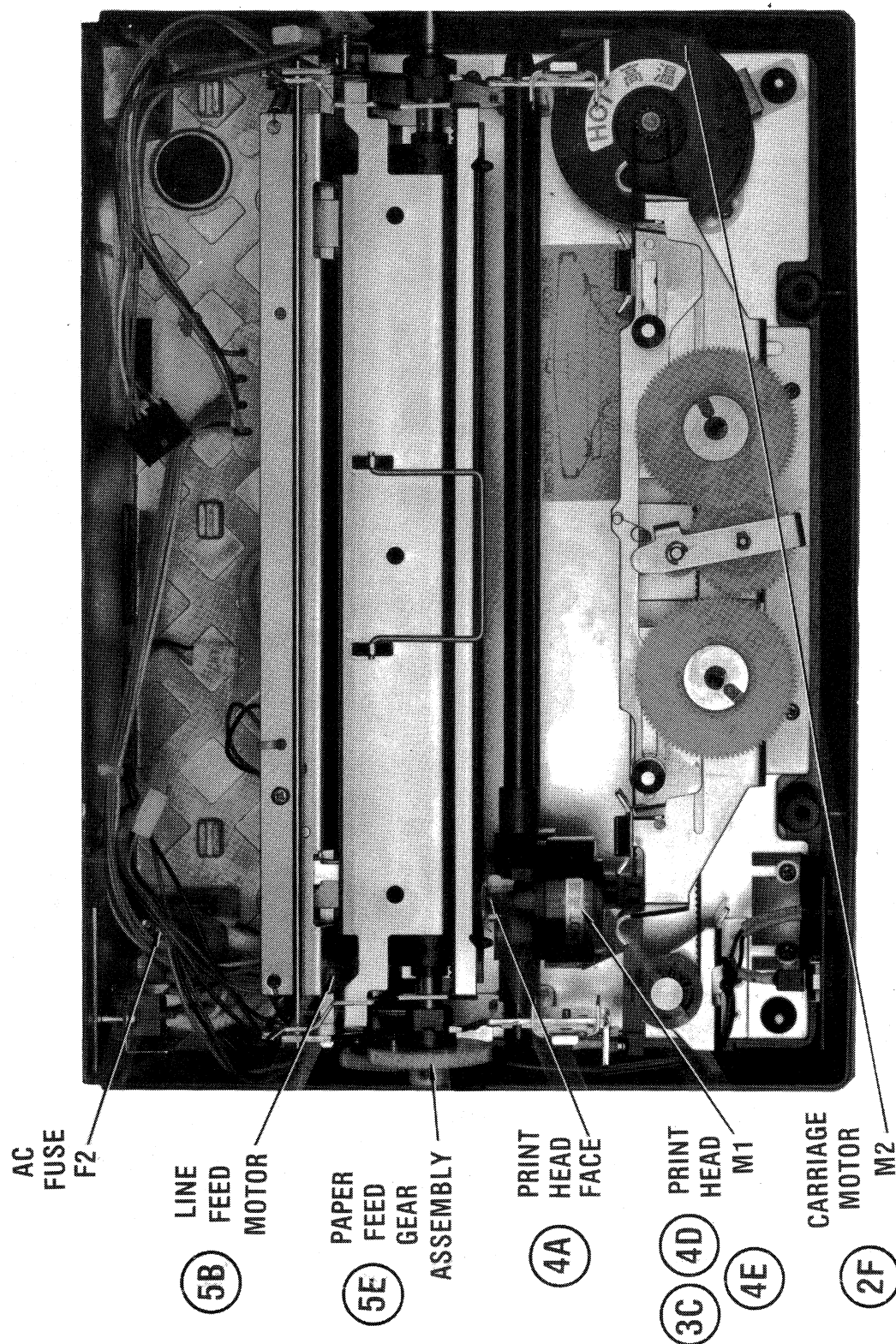
### **STATIC ELECTRICITY**

Static electricity discharge can affect the Computer. In order to minimize the possibility, use anti-static mats, sprays, tools and materials, and maintain good humidity in the Computer environment.

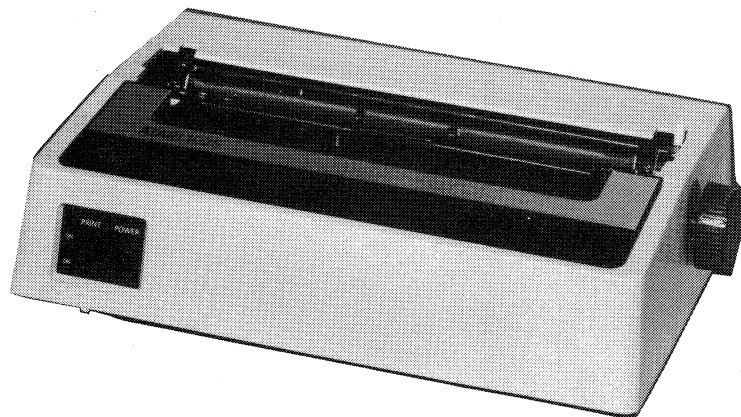
### **MONITOR**

Use an isolation transformer with any Monitor that does not come as part of the system since some Monitors use a HOT chassis (chassis connected to one side of the AC line). The face of the Monitor should never be left on for long periods of time at high brightness level except when pattern is being changed periodically. Use caution when cleaning anti-glare screens, to preserve the glare-reduction feature.

# PRELIMINARY SERVICE CHECKS (Continued)



CHASSIS-TOP VIEW



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## PRELIMINARY SERVICE CHECKS

ENCLOSED

## SAFETY PRECAUTIONS

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# SAMS™

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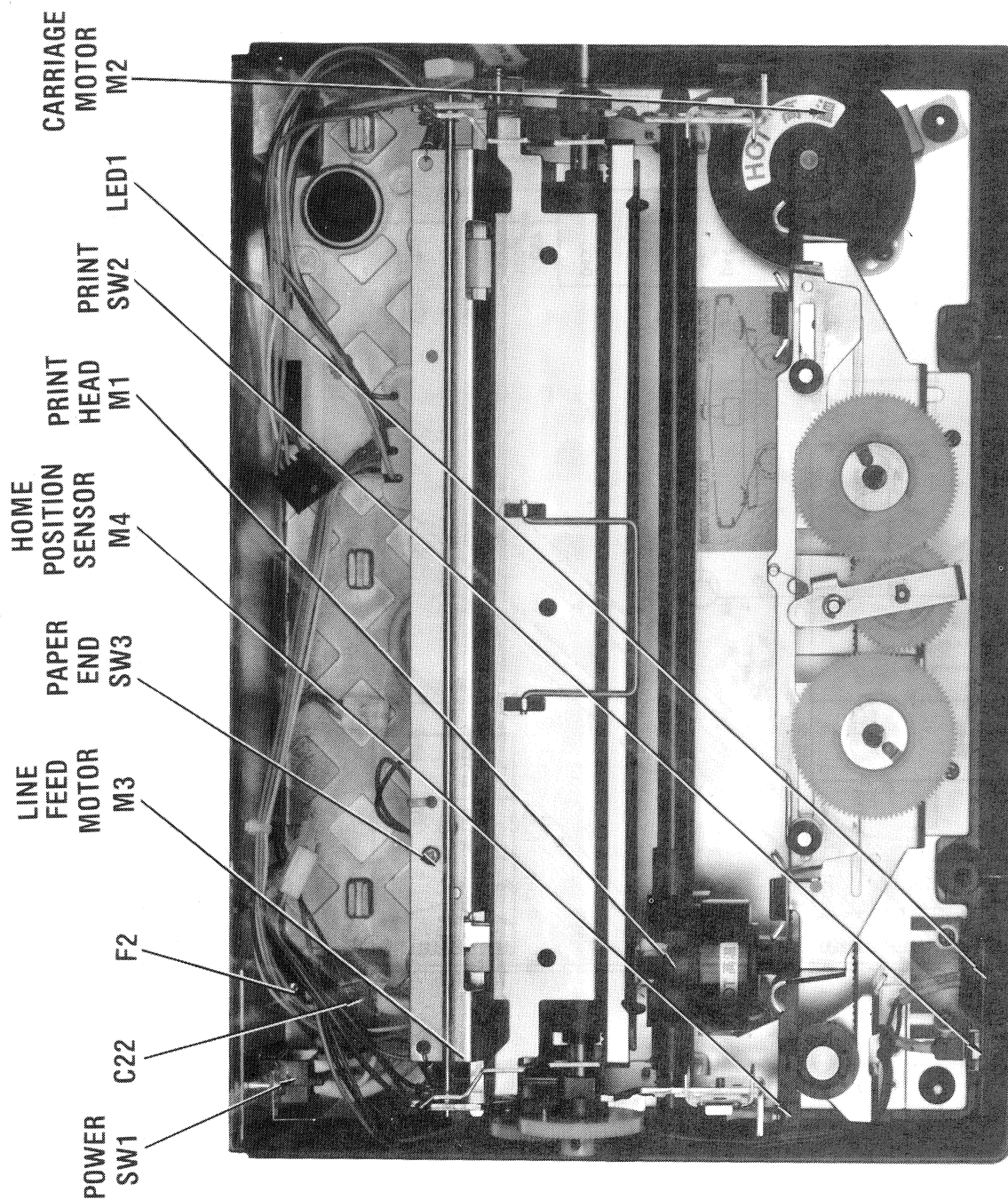


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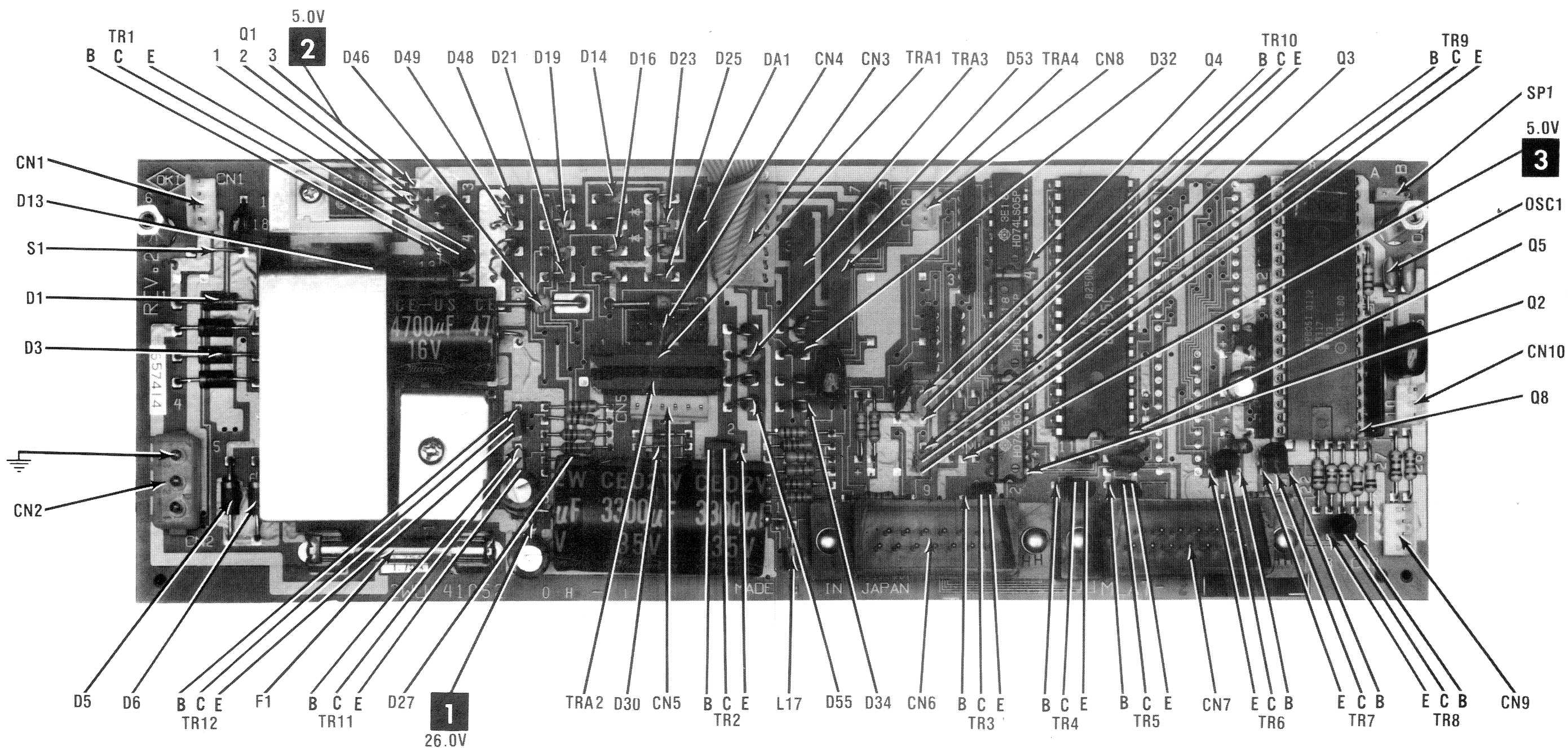
FOR TERMINAL GUIDES AND NOTES  
SEE PAGE 13, 16

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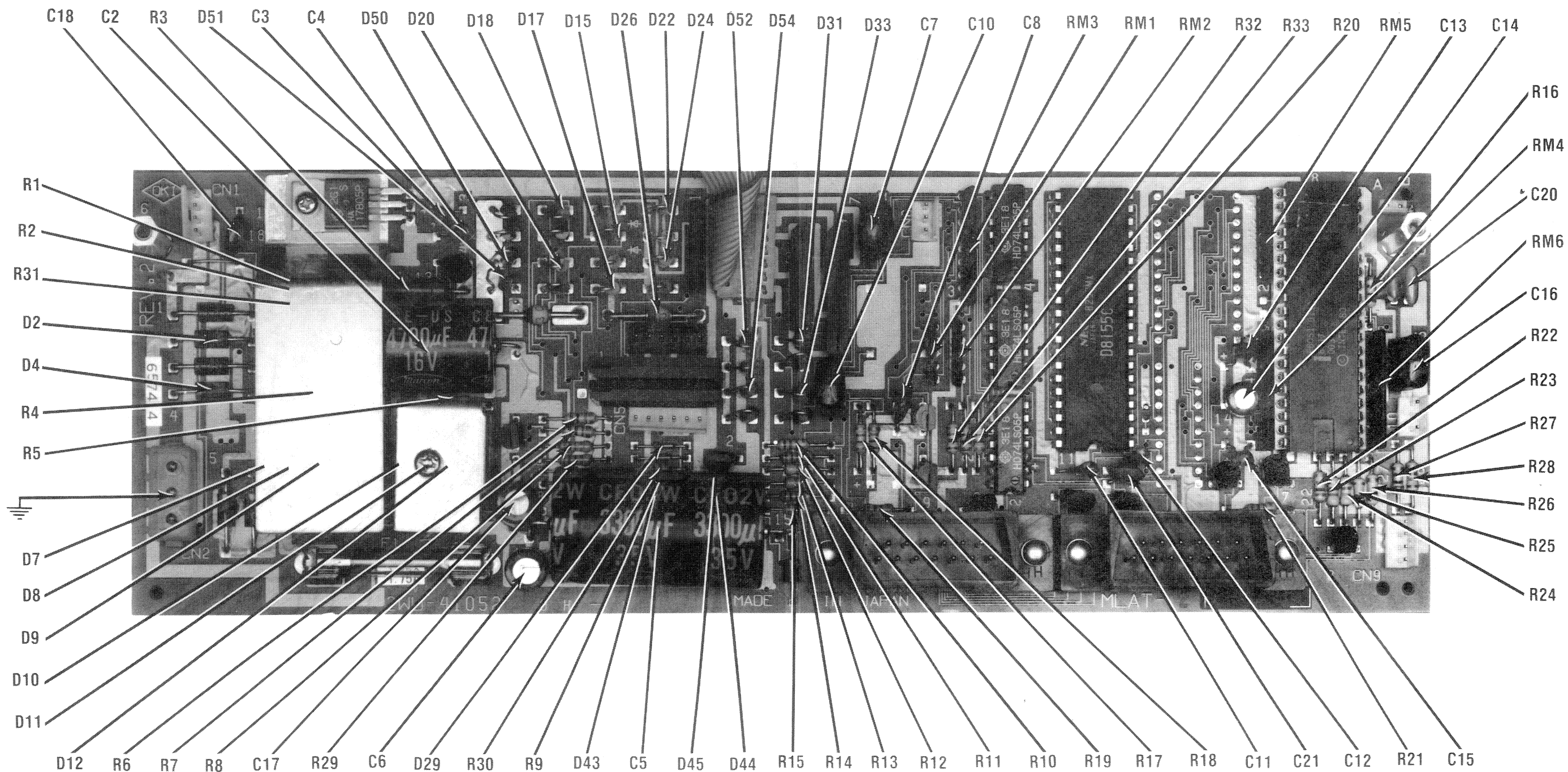


CHASSIS-TOP VIEW





NOTE: ARROWS ON IC'S INDICATE PIN 1 UNLESS NOTED



# PARTS LIST AND DESCRIPTION

When ordering parts, state Model, Part Number, and Description

## SEMICONDUCTORS (Select replacement for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA				NOTES
			NTE PART No.	ECG PART No.	RCA PART No.	ZENITH PART No.	
D1 thru D6	GP15B		NTE125	ECG125	SK3081/125	903-334	
D7	CSM2B2						
D8,9	M1Z		NTE116	ECG116	SK3311	212-76-02	
D10	SAME AS D7						
D11,2	SAME AS D8						
D13	24B2		NTE5031A	ECG5031A	SK24A/5031A	103-212	
D14 thru	MOZ		NTE116	ECG116	SK3313/116	212-76-02	
D25	20		NTE5135A	ECG5135A	SK20X/5135A		
D26	5.1B1		NTE5010A	ECG5010A	SK5A1/5010A	103-279-10	
D27,8							
D29	6.2B2		NTE5013A	ECG5013A	SK6A2/5013A	103-Z9008	
D30			NTE177	ECG177	SK9091/177	103-131	
D31 thru	SAME AS D14						
D34							
D43,4							
D45	5.1B2		NTE5010A	ECG5010A	SK5A1/5010A	103-279-10	
D46	SAME AS D26						
D48 thru	SAME AS D14						
D55							
DA1							
Q1	HA17805P		NTE177(6)	ECG177(6)	SK9091/177(6)	103-131(6)	
Q2 thru Q4	HD74LS05P		NTE960	ECG960	SK3591/960	221-Z9043	
Q5	D8155C		NTE74LS05	ECG74LS05	SK74LS05	HE-443-818	
Q6			NTE74LS373	ECG74LS373	SK74LS373	HE-443-867	(1)
Q7			NTE2732(7)	ECG2732(7)			
Q8	1P8051						
TR1,2	(2S)C2719L		NTE289A	ECG289A	SK3124A/289A	921-1114	
TR3	(2S)A952M		NTE290A	ECG290A	SK3114A/290A	121-Z9003*	
TR4 thru	(2S)C2001K		NTE85	ECG85	SK3849/293	921-1114	
TR8							

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## ∞ PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

### SEMICONDUCTORS (Select replacement for best results)

ITEM No.	TYPE No.	MFG. PART No.	REPLACEMENT DATA				NOTES
			NTE PART No.	ECG PART No.	RCA PART No.	ZENITH PART No.	
TR9 thru TR12 TRA1,2 TRA3 TRA4	SAME AS TR1 STA403A STA303A SAME AS TRA1						

\* Lead configuration may vary from original.

(6) 6 required; pin 4 is common anode for 6 diodes.  
(7) Programming required.

(1) May be used in some versions.

## WIRING DATA

Shielded Hook-up Wire .....	Use BELDEN No. 8401 or 8421 (Single-Conductor)
General-use Unshielded Hook-up Wire .....	8208 (Two-Conductor)
	8529 (Solid) Available in 13 Colors
	8522 (Stranded) Available in 13 Colors

## PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING	MFGR. PART No.
C3,C4	2.2uF 35V	
C11, C12	1uF 35V	

ITEM No.	RATING	MFGR. PART No.
C13 C15	2.2uF 35V 1uF 35V	

### CAPACITORS

ITEM No.	RATING	MFGR. PART No.
C22	.1 250VAC	

### RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		MFGR. PART No.	NTE PART No.	WORKMAN PART No.
RM1,RM2	Resistor Network (1)	IHR-4-102 (5)		
RM3	Resistor Network (2)	IHR-8-102JA (5)		
RM4	Resistor Network (3)	IHR-8-512JA (5)		
RM5	Resistor Network (4)	IHR-6-512 (5)		
RM6	Resistor Network (3)	IHR-8-512JA (5)		

- (1) Contains four (4 ea.) 1000 ohms.  
 (2) Contains eight (8 ea.) 1000 ohms, 5%.  
 (3) Contains eight (8 ea.) 5100 ohms, 5%.  
 (4) Contains six (6 ea.) 5100 ohms.  
 (5) On unit number.

### FUSE DEVICES

ITEM NO.	DESCRIPTION	MFGR. PART NO.		NOTES
		DEVICE	HOLDER	
F1,F2	1.75A @ 250V Fast-Acting			

### COILS & TRANSFORMERS

ITEM No.	FUNCTION	MFGR. PART No.	OTHER IDENTIFICATION	NOTES
T1	Power Transformer		4LP-45191-137	

### MISCELLANEOUS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
L17	Ferrite Bead		
LED 1	LED		Power, Red
M1	Print Head		
M2	Carriage Motor		
M3	Line Feed Motor		
M4	Home Position Sensor		
OSC 1	Crystal		7.37MHz
SK	Network		
SW1	Switch		Power
SW2	Switch		Print
SW3	Switch		Paper End Detector

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## TEST EQUIPMENT

Test Equipment listed by Manufacturer illustrates typical or equivalent equipment used by SAMS' Engineers to obtain measurements and is compatible with most types used by field service technicians.

### TEST EQUIPMENT (COMPUTERFACTS)

Equipment Name	B & K Precision Equipment No.	Sencore Equipment No.	
OSCILLOSCOPE	1570A,1590A,1596	SC61	
LOGIC PROBE	DP51		
LOGIC PULSER	DP101		
DIGITAL VOM	2830	DVM37,DVM56,SC61	
ANALOG VOM	277		
ISOLATION TRANSFORMER	TR110,1604,1653,1655	PR57	
FREQUENCY COUNTER	1803,1805	FC71,SC61	
COLOR BAR GENERATOR	1211A,1248,1251,1260	CG25,VA62	
RGB GENERATOR	1260		
FUNCTION GENERATOR	3020		
HI-VOLTAGE PROBE VOM/DMM Accessory probes	HV-44	HP200	
TEMPERATURE PROBE	TP-28		
CRT ANALYZER	467,470	CR70	

## TROUBLESHOOTING

### POWER SUPPLY

If Printer is dead, check AC Fuse (F2). If Fuse F2 is open, check Diodes D5 and D6 for shorts. If Fuse F2 is good, check for 31.5V AC between pins 3 and 4 and 9.8V AC between pins 1 and 2 of Connector CN1. If voltages are not correct, check Power Transformer (T1), Power Switch (SW1) and AC Line Choke (RC).

Check for 26V at cathode of Diode D13. If voltage is not correct, check SCRs D7 and D10 and associated components.

Check for 10.5V at cathode of Diode D4. If voltage is missing check Fuse F1. If Fuse F1 is open, check Bridge Rectifiers (D1 thru D4), Voltage Regulator IC (Q1) and associated components.

### LINE FEED MALFUNCTION

Turn platen knob by hand, if platen does not turn smoothly, check the gear assembly on the left side of the Printer. If platen turns smoothly, check resistance of Line Feed Motor (M3). Check for about 73 ohms between pins 1 and 5, pins 3 and 5, pins 2 and 6 and between pins 4 and 6 of Connector CN5. If Printer will not print while in self test mode, check

waveforms at pins 25 thru 28, and 33 thru 36 of Interface IC (Q5). If waveforms are missing, check IC Q5 and CPU IC (Q8) by substitution. If waveforms are present, check ICs Q3 and Q4 and Driver ICs TR1A and TR2A.

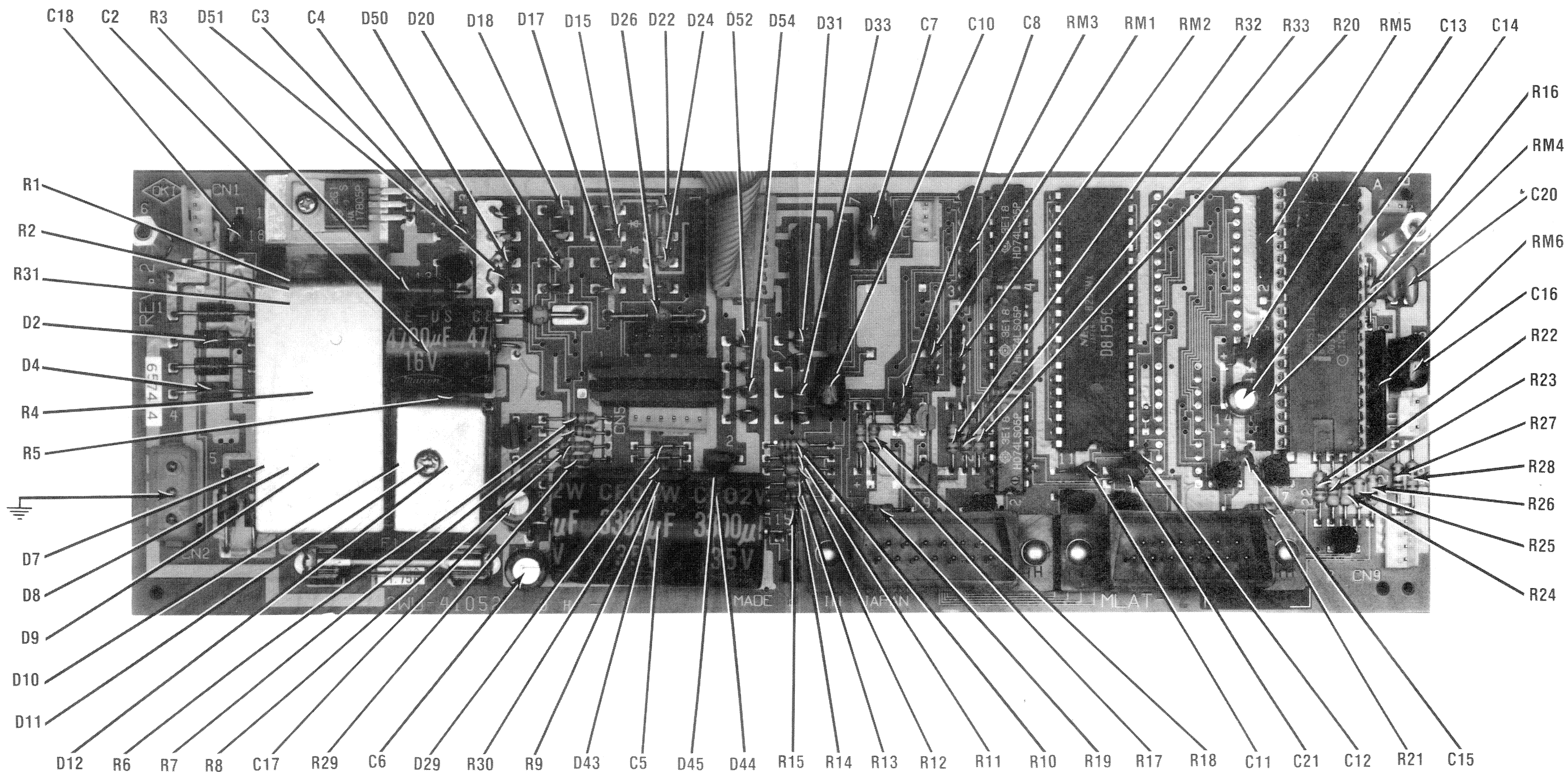
### CARRIAGE ASSEMBLY DOES NOT MOVE

Check the resistance of the Carriage Motor (M2), check for 60 ohms between pins 5 and 1, pins 5 and 3, pins 6 and 2, and pins 6 and 4 of Connector CN4. If resistances are not correct replace Carriage Motor.

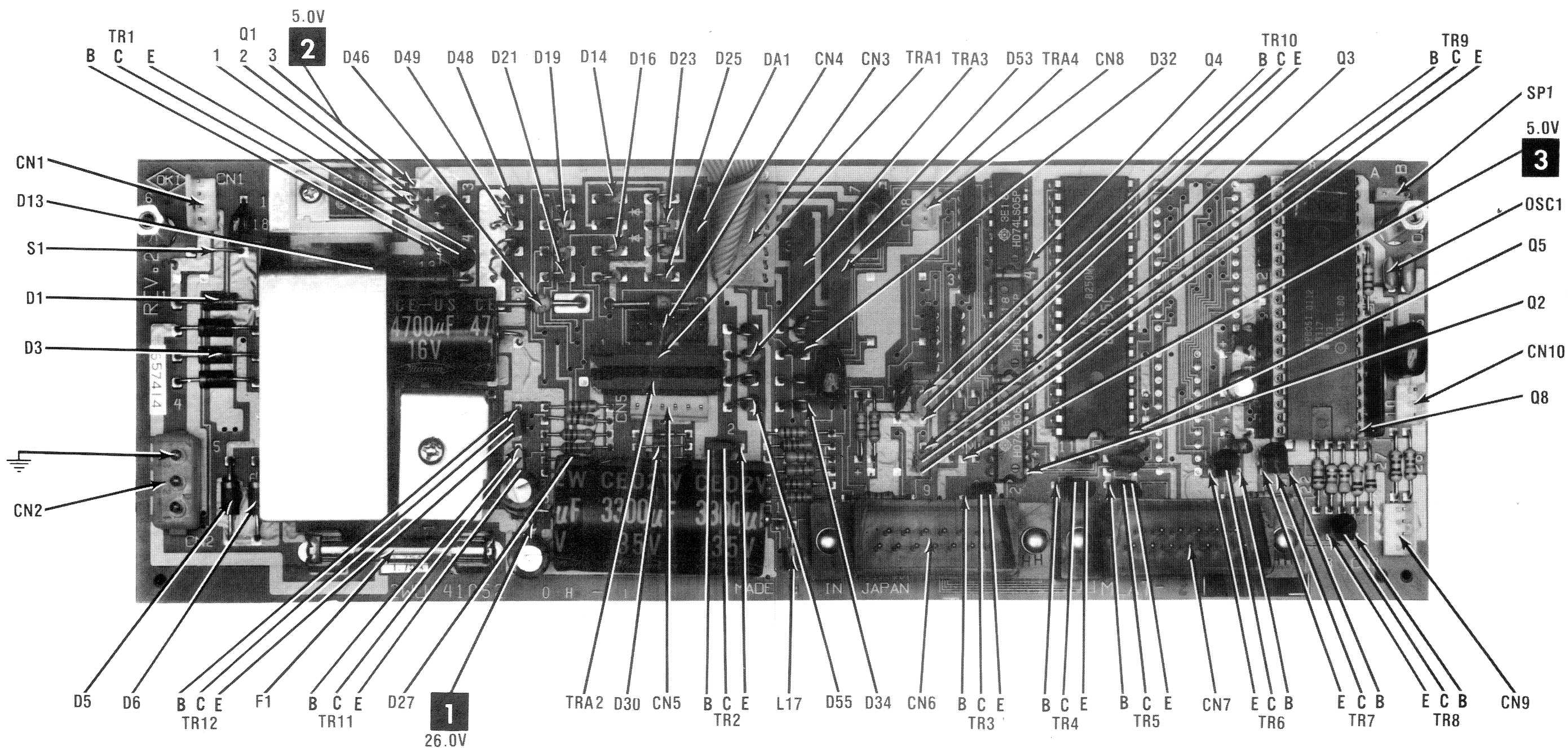
If the carriage assembly moves erratically check Home Position Sensor (M4). Check Connector CN10 for good connection. Check Interface IC (Q5) by substitution. Check IC Q4.

### MISSING DOTS IN PRINT PATTERN

Actuate self test mode. Check for 26V P-P signal at pins 8 thru 14 of Connector CN3. If signal is present on all pins, check resistance of Print Head (M1). If 26V P-P signal is missing at any pin check CPU IC (Q8) by substitution. If signal is low about 5V P-P check Driver ICs (IRA3 and IRA4).







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NOTE: ARROWS ON IC'S INDICATE PIN 1 UNLESS NOTED



## LOGIC CHART

PIN NO.	IC Q2	IC Q3	IC Q4	PIN NO.	IC Q5	PIN NO.	IC Q5	PIN NO.	IC Q8	PIN NO.	IC Q8
1	H	H	P	1	L	21	L	1	P	21	H
2	L	L	L	2	H	22	H	2	P	22	H
3	H	P	P	3	L	23	H	3	P	23	H
4	L	L	L	4	L	24	H	4	P	24	H
5	H	P	P	5	H	25	P	5	P	25	L
6	L	L	L	6	L	26	P	6	P	26	L
7	L	L	L	7	H	27	P	7	P	27	H
8	L	L	L	8	P	28	P	8	H	28	P
9	P	P	P	9	P	29	H	9	L	29	H
10	L	L	L	10	P	30	H	10	L	30	P
11	P	P	P	11	P	31	H	11	H	31	H
12	L	L	L	12	P	32	H	12	H	32	P
13	P	P	P	13	P	33	P	13	L	33	P
14	H	H	H	14	P	34	P	14	L	34	P
				15	P	35	H	15	H	35	P
				16	P	36	P	16	P	36	P
17				17	P	37	L	17	P	37	P
18				18	P	38	H	18	P	38	P
19				19	P	39	H	19	P	39	P
20				20	L	40	H	20	L	40	H

## SAFETY PRECAUTIONS

1. Use an isolation transformer for servicing.
2. Maintain AC line voltage at rated input.
3. Remove AC power from the Printer before servicing or installing electrostatically sensitive devices. Examples of typical ES devices are integrated circuits and semiconductors "chip" components.
4. Use extreme caution when handling the printed circuit boards. Some semiconductor devices can be damaged easily by static electricity. Drain off any electrostatic charge on your body by touching a known earth ground. Wear a commercially available discharging wrist strap device. This should be removed prior to applying power to the unit under test.
5. Use a grounded-tip, low voltage soldering iron.
6. Use an isolation (times 10) probe on scope.
7. Do not remove or install board, mechanical or electrical parts, or other peripherals with Printer AC power On.
8. Do not use freon-propelled sprays. These can generate electrical charges sufficient to damage semiconductor devices.
9. This Printer is equipped with a grounded three-pronged AC plug. This plug must fit into a grounded AC power outlet. Do not defeat the AC plug safety feature.
10. Periodically examine the AC power cord for damaged or cracked insulation.
11. The Printer cabinet is equipped with vents to prevent heat build-up. Never block, cover, or obstruct these vents.
12. Instructions should be given, especially to children, that objects should not be dropped or pushed into the vents of the cabinet. This could cause shock or equipment damage.
13. Never expose the Printer to water. If exposed to water turn the unit Off. Do not place the Printer near possible water sources.

## SCHEMATIC NOTES

—\*— Circuitry not used in some versions

--- Circuitry used in some versions

⊕ See parts list

⊕ Ground

Voltages measured with digital meter.

Waveforms and voltages are taken from ground, unless noted otherwise.

Voltages, waveforms and logic readings taken with Printer running in Self-Test mode.

Waveforms taken with triggered scope and Sweep/Time switch in Calibrate position, scope input set for DC coupling on "0" reference voltage waveforms. Switch to AC input to view waveforms after DC reference is measured when necessary. Each waveform is 7.5cm width with DC reference voltage given at the bottom line of each waveform.

Item numbers in rectangles appear in the alignment/adjustment instructions.

Supply voltage maintained as shown at input.

Controls adjusted for normal operation.

Terminal identification may not be found on unit.

Capacitors are 50 volts or less, 5% unless noted.

Electrolytic capacitors are 50 volts or less, 20% unless noted.

Resistors are 1/2W or less, 5% unless noted.

Value in ( ) used in some versions.

Measurements taken with switching as shown, unless noted.

ATARI  
MODEL 1025

# DISASSEMBLY INSTRUCTIONS

## UPPER COVER REMOVAL

Remove platen knob, remove top cover by pulling upwards. Loosen two screws holding switch assembly and slide switch assembly backwards. Remove two screws from inside the front of upper cover. Tip upper cover back and lift upper cover from Printer.

## PRINT HEAD REMOVAL

Remove upper cover, slide carriage assembly to right end of Printer. Carefully remove print head cable plug from flat cable connector located on the carriage assembly frame beneath the print head. Push down print head lock lever and lift head straight up from the carriage assembly frame.

## PRINTER MECHANISM REMOVAL

Remove Printer upper cover. Slide carriage assembly to far right. Disconnect print head cable plug and remove print head. Remove the flat cable connector screw and the connector from carriage frame assembly. Cut plastic tie-wraps that fasten flat cable to side of printer mechanism. Disconnect all connectors attached to P.C. board. Remove P.C. board. Set Printer up side down on a soft cloth and remove four screws holding mechanism to the bottom of cabinet. Carefully remove bottom case and set printer mechanism upright.

## MAIN CONTROL BOARD REMOVAL

Remove upper cover assembly. Disconnect all connectors from Main Control Board. Remove print head assembly. Remove flat cable connector from carriage frame assembly. Cut the tie-wrap which fastens the flat cable to the right side of printer mechanism. Remove two screws holding Main Control Board. Lift Main Control from Printer.

## PLATEN REMOVAL

Remove cabinet top cover. Lift scale bar to highest position. Remove two screws holding paper separator and remove paper separator. Remove C ring and platen bearing from right end of platen. Pull left bearing side ways from side plate. Turn platen bearing 90° and pull out platen.

## CARRIAGE MOTOR REMOVAL

Remove the upper cover. Remove the Main Control Board, disconnect Connector CN4. Cut the tie wraps securing the Carriage Motor leads. Remove two screws fastening the Carriage Motor to the bottom cover. Remove carriage belt from Carriage Motor pulley. Lift Carriage Motor from Printer.

## PAPER FEED MOTOR REMOVAL

Remove upper case. Remove Main Control Board. Remove two phillips screws fastening Paper Feed Motor to left side of printer mechanism. Remove Paper Feed Motor from Printer.

# MISCELLANEOUS ADJUSTMENTS

## FIRST CHARACTER PRINTING POSITION ADJUSTMENT

Loosen screws fastening Carriage Motor to bottom cover. Turn motor assembly a little one way or the other so that when the power is turned ON, the print head returns and stops at the home sensor position within tolerance, see Figure 1. If changing position of motor assembly does not correct the print position, change the engagement position of the carriage synchro-belt on the pulley by one or two teeth.

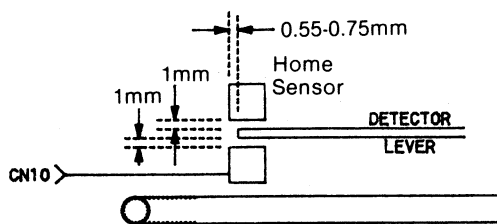


Figure 1

## PLATEN/PAPER SEPARATOR ADJUSTMENT

Remove the upper cover, loosen the paper separator screws. Adjust the clearance between the platen and the paper separator for approximately 0.5mm. Tighten the paper separator screws, see Figure 2.

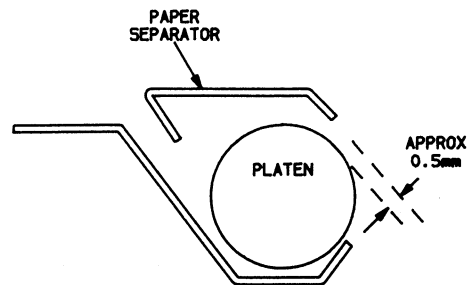


Figure 2

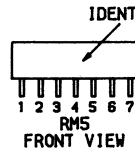
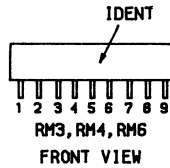
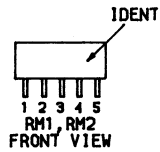
## PRINthead ADJUSTMENT

Print head adjustment should be performed after repair of printer mechanism, carriage assembly frame, or print head. Loosen carriage shaft screws on the sides of the printer mechanism. Move carriage shaft forward or backward until gap between platen and print head is between 0.45mm and 0.5mm.

## LINE DEFINITIONS

**AD0 THRU AD7** ..... Address Bus, Bits 0 Thru 7  
**COMMAND** ..... Input to Counter 0  
**DATA IN** ..... Serial Port's Receiver Data Input  
**DATA OUT** ..... Serial Port's Transmitted Data  
**P1.0 THRU P1.6** ..... Port 1 Bit 0 Thru Port 1 Bit 6  
**5V READY** ..... Interrupt, Vectored to Service Program

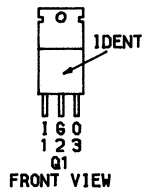
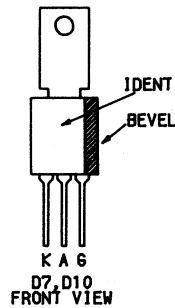
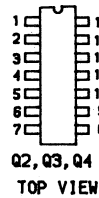
## IC PINOUTS & TERMINAL GUIDES



D8155C

1	PC3	VCC	40
2	PC4	PC2	39
3	TIMER 1N	PC1	38
4	RESET	PC0	37
5	PCS	PB7	36
6	TIMER OUT	PB6	35
7	IO/M	PB5	34
8	CE	PB4	33
9	RD	PB3	32
10	WR	PB2	31
11	ALE	PB1	30
12	AD0	PB0	29
13	AD1	PA7	28
14	AD2	PA6	27
15	AD3	PA5	26
16	AD4	PA4	25
17	AD5	PA3	24
18	AD6	PA2	23
19	AD7	PA1	22
20	GND	PA0	21

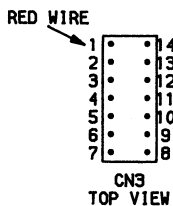
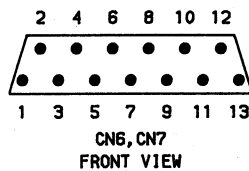
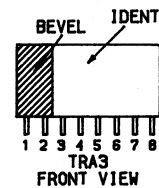
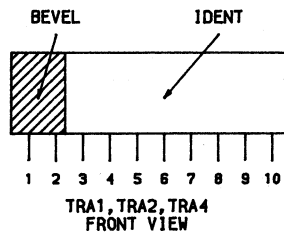
Q5  
SRAM  
TOP VIEW

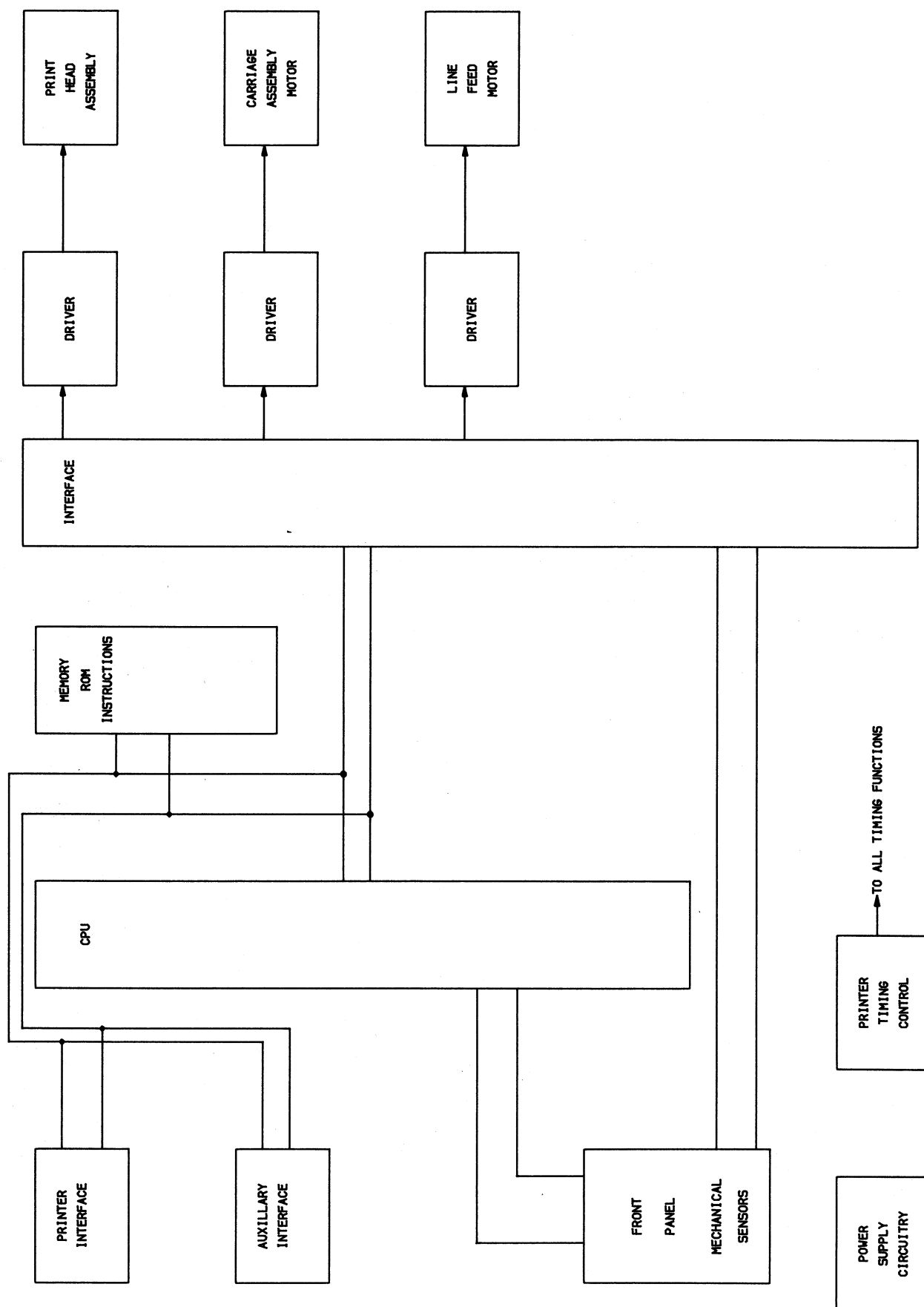


IP8051

1	P1.0	VCC	40
2	P1.1	P0.0	39 (AD0)
3	P1.2	P0.1	38 (AD1)
4	P1.3	P0.2	37 (AD2)
5	P1.4	P0.3	36 (AD3)
6	P1.5	P0.4	35 (AD4)
7	P1.6	P0.5	34 (AD5)
8	P1.7	P0.6	33 (AD6)
9	RST/VPD	P0.7	32 (AD7)
10	P3.0	EA/VDD	31
11	P3.1	ALE/PROG	30
12	P3.2	PSEN	29
13	P3.3	P2.7	28 (A15)
14	P3.4	P2.6	27 (A14)
15	P3.5	P2.5	26 (A13)
16	P3.6	P2.4	25 (A12)
17	P3.7	P2.3	24 (A11)
18	XTAL2	P2.2	23 (A10)
19	XTAL1	P2.1	22 (A9)
20	GND	P2.0	21 (A8)

Q8  
CPU  
TOP VIEW





BLOCK DIAGRAM

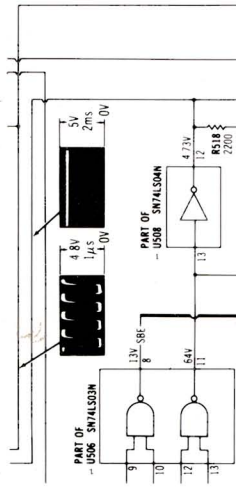




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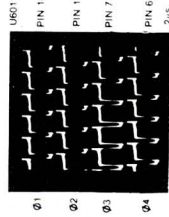
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- Step by Step Troubleshooting guides the technician through the necessary procedures to quickly locate the problem.

## TROUBLESHOOTING



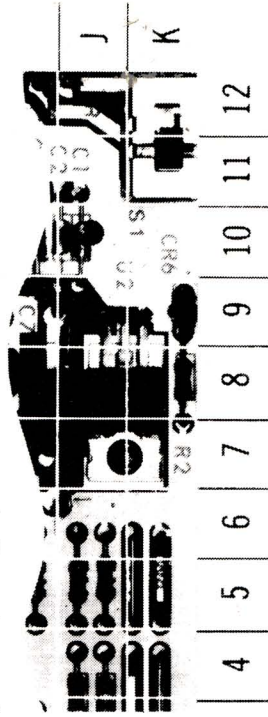
## MICROPROCESSOR CHIP (CPU) OPERATION

Verify the processor is functioning by checking the signals on the address lines (pins 10 thru 24 of IC U600) and the data lines (pins 41 thru 56) using a logic probe or a scope. If a logic probe is used, refer to the "Logic Chart" for the correct readings. If a scope is used, the waveforms on the address lines (except pins 22 and 23 which have no signal in Power Up mode) should be similar to Figure 1. The waveforms on the data lines should be similar to Figure 2.

- Logic Chart containing logic probe readings to isolate defective circuitry and components.

PIN NO.	IC U100	PIN NO.	IC U100	PIN NO.	IC U102	IC U103	IC U104	IC U105	IC U106	IC U107	IC U108	IC U109
1	P	21	P	1	L	L	L	L	L	L	L	L
2	P	22	P.	2	P	P	P	P	P	P	P	P
3	P	23	P.	3	P	H	H	H	H	H	H	H

- Quick Component Location using the SAMS exclusive **GRIDTRACE**, **CIRCUITRACE**, and component photographs.



- Complete Components Parts List in an easy to use format with field replacements shown when possible. SAMS unique semiconductor, chip and IC cross-reference gives you many replacements to choose from and is available at your Electronic Distributor.

## SEMICONDUCTORS (Select replacement for best results)

ITEM No.	TYPE No.	MFRG PART No.	REPLACEMENT DATA						
			ECG PART No.	GENERAL ELECTRIC PART No.	MOTOROLA PART No.	NTE PART No.	RCA PART No.	WORKMAN PART No.	ZENITH PART No.
D102	15S53	1149-2576	EGS519	GE-514	1N4935	NTE519	SK9091/177	MEP925/519	103-131
D103	15S53	1149-2527	EGS109	1N493		NTE109	SK3088	MEP134/109	103-29001
D201	1N4004GP	1201-4205	EGG116	GE-504A	1N4004	NTE116	SK3312	MEP157	212-76-02
D503 thru D603	15S53	1149-2576	EGS519	GE-514	1N4935	NTE519	SK9091/177	MEP925/519	103-131

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